LINNTON PLYWOOD ASSOCIATION – TECHNICAL EVALUATION

Upland Site: Linnton Plywood Association
10504 NW Saint Helens Road (Fig. 1)
26.5 Acres
RM 4.4 to 4.8

The Property was used for the past century, with extensive over-water docks, pilings, and water front use, as a sawmill with subsequent filling and leveling of the site.

Ownership/Operational History

Taxlot 100 (riparian):

1971 – present	Linnton Plywood Association		Owner
1951 – 2000	Linnton Plywood Association	Plywood Mfg	Operator
2002 – present	Forest Products Machinery	Equipment storage	Operator
1971 – 2001	Columbia River Sand & Gravel	Sand & Gravel (11 acres)	Operator
2001 – present	Glacier Northwest	Sand & Gravel (11 acres)	Operator

Taxlot 800 (riparian):

1974 – present	Linnton Plywood Association	Equipment/material storage	Owner
1987 – present	Harmer Steel	Equipment/material storage	Operator

Taxlot 200:

1971 – present	Linnton Plywood Association		Owner
1951 – present	Linnton Plywood Association	Office parking	Operator

Submerged Lands:

~1952-1988	ODSL Submerged Land Lease #ML9187/APP 16845	Log raft storage
1988 – 1999		
1999 – 2018		

Easements:

Taxlot 100:

2004 – present	BP/Arco	monitoring wells

Taxlot 200:

1971 – present	NW Natural	Gas line	agreement provided
1972 – present	City of Portland	Sewer Line	agreement provided
Unknown	Unknown (City or ODOT?)	Storm water outfalls (1 and 6)	no known agreement

Operations – Processes, Chemicals & Wastes

Plywood was manufactured from raw logs to finished products from 1951 until 2001. In 2001, all manufacturing operations ceased and the business closed. A salvage and mothballing operation was conducted following plant closure to remove equipment, feed stocks and product, and any waste material.

The Linnton Plywood Association (LPA) peeled veneer from whole logs from 1951 until 1992, when it began purchasing rather than making veneer. Logs were stored in rafts along the shoreline until 1992. The LPA used purchased veneer from 1992 until 2001, when all business operations ceased.

LPA's operations included, at various times, the following activities:

- Using a log peeler to produce wood veneer by peeling it from whole logs
- Processing the veneer through dryers
- Mixing phenol-formaldehyde resin glue and applying the mixed glue to the veneer
- Pressing plywood, with glue recovery and recycling systems
- Sanding and finishing plywood
- Marking edges of plywood for identification with water-based paint
- Sealing edges of finished "Ply-form" plywood sheets (used to build forms for poured concrete) with water-based paint, and treating the faces of Ply-form sheets with form oil (also known as release oil or pale oil) to facilitate release of the plywood from hardened concrete
- Firing drying kilns and reducing solid waste with wood dust combustion

Logs were received by truck and then skidded into the river, where they were cut to length, pulled into the plant and peeled for veneer. A boom was placed in the water to keep logs in the river near LPA's property. After cessation of veneer peeling operations in 1992, veneer was shipped to LPA via truck and rail. Plywood edge trimmings were sold for hogged fuel. Sander dust was burned on site for heating the veneer dryer. Resin residuals generated during manufacturing were captured and mixed with water for reuse in resin feedstock. Pale oil was applied to plywood used as concrete forms. Gasoline and diesel fuel were used to power machinery at the plant. Water-based paint was used to protect the sides of the plywood concrete forms. Boiler blowdown water was generated during routine maintenance of boilers and was pumped into the City of Portland sewer. Hydraulic oil from holding tanks was recycled by Spencer Environmental. Recovered wood waste material within the plant was collected and conveyed to storage areas via overhead ducts and sold as fuel or landscaping materials.

Veneers were stored in the green veneer building until ready for drying in the steam dryer and gas dryer buildings. Phenol-formaldehyde glues were applied to dried veneers via the spreaders, the glued veneers were stacked in layers to form plywood, and plywood sheets were pressed in the pressing and finishing room. The mixing and storage of glue was conducted within a roofed containment area and glue was piped to the spreaders for application. These spreaders were cleaned after each shift, and the wastewater and glue from the spreaders with were directed to the glue recovery and recycling systems, where they were incorporated with fresh product.

In a covered area between the Covered Storage and Dryer buildings, the plywood was marked with a water-soluble paint. The edges of Ply-form sheets were sealed with paint and the sheet faces were treated with form oil.

Surface Structures

Main office (1951-present)
Press and finishing building (1951-present)
Veneer building (1951 - present)
Dryer building (1951-1974) A new Dryer Building was built on the north side of the plant in 1974.
Warehouse - A Plywood Storage building was built onto the west end of the main building complex sometime between 1962 and 1971.
Log processing building (1951 - present)
Maintenance shop (1980 - present)
Forklift repair shop (1961 - present)
Purchasing agent building
Caustic Storage (1951-present)
Fire water intake structure (1972 - present)
Boiler house – (1951 - present)
Propane ASTs – (1972 - ?)
Bunker C AST (1980? - ?)
Diesel Storage AST (1961 - present)
Pale Oil AST (1961 - 1989)
Gasoline ASTs (1981 - 1994)
Hog Room (1951 - present)
Edge Sealing Area (1951 - present)
Chip Bins & screen (1961 - present)
Sander Dust Staging Area/Sander Dust Bin (1961 - present)
Resin Storage Tanks w/vaults (1961 - present)
Steam Cleaning Pad (1972 - present)
Sander Dust Burner (1980 - present)
Mobile Vehicle Cleaning Area (1995-present)
Transformers (T1, T2, T3, T4A, T4B, T4C, T5A, T5B, T5C) – PCB oil in the transformers was disposed of by GE at 2535 NW 28th Ave., Portland, OR, in 1999.
Gas Pumps
Cyclones

Potential Sources

Potential sources of contamination to storm water runoff were petroleum hydrocarbons associated with incidental releases of oils, greases, and fuels, polychlorinated biphenyls (PCBs) from potential releases from site transformers, and heavy metals from general site operations. The maintenance and auto repair shop areas (and associated steam-cleaning area near Outfall 5) and the oil and grease room (used for drum storage of hydraulic and lube oil)were potential sources of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) including PAHs, and heavy metals to storm water runoff, groundwater, and riverbank soils.

TABLE 1
Potential Source Area Identification for Linnton Plywood Association and the Site Predecessors

Date Range for Potential Source	Potential Source Identification	Potential Source Description
1951-1992	Log Processing	Linnton Plywood Association used the site for peeling logs. Logs were brought to site by water, rail or truck. The logs were cut to size in the river in the log pond area. The logs were then peeled into veneer inside the plant. The lathe knives were cleaned using kerosene. The kerosene and oils drained off the lathe may have been conveyed to the river. Kerosene was the primary cleaning agent used.
1952 to 2001	Dredge Spoil Disposal	The area of river sediments adjacent to the plant has been dredged since 1952 and the dredge spoils have been placed at the plant and on land on the eastern half of the facility. The plant had a dredging permit (Oregon Division of State Lands Permit No. 3081) for these operations.
1970- 2001	Paint and Pale Oil Application	Water-based paint was applied to the edges of plywood concrete forms in a semi-covered area. Paint overspray can be carried with storm water from this area and discharge to the river via outfall 6. Metals in paint pigments are typically cadmium, chromium, lead and zinc. Pale oil is applied as a release agent to the plywood near the same area as the paint application booth. The oil is applied by rolling with a roller application unit. Oil spillage can be carried with storm water and discharge to the river via outfall 6.
1981 to 2001	Sander Dust Burner Scrubber Overflow and Scrubber Ash Disposal	Sander dust was a by-product of operations, but was collected and used to fire the veneer dryer. PAHs and dibenzofuran are byproducts of wood combustion. A sander dust burner operates on the north side of the plant. A scrubber is used to remove ash from the air discharge (refer to discussion on Air Pollution Controls). Sander dust is burned in a sander dust burner and the heat used to run the dryers and generate steam. Flue gas from the sander dust burner is treated in a wet scrubber to remove particulate emissions. The wet solid stream is collected in a sealed dumpster to settle the solids. Water is pumped back to the scrubber system. Drips and seeps with ash solids occur incidentally to the ground around the scrubber. There is a catch basin that goes to the city sewer, however there were visible indications

Date Range for Potential Source	Potential Source Identification	Potential Source Description
		that scrubber water with ash solids flows over the parking lot to the outfall system. Prior to 1997, when Columbia Sand and Gravel began operation, the ash was landfilled on this parcel. Columbia Sand and Gravel has placed over 10 feet of fill on the site since their operations started, so the ash in now capped with sand. After 1997, the sander dust ash were spread on the ground to dry and then transferred to Columbia Sand and Gravel's sand operation on the east side to be mixed with the sand processed by Columbia Sand and Gravel in the same area as the original disposal site.
1950s to 1989	Pale Oil Storage	Pale oil is a mixture of petroleum oils blended to meet certain specifications. Pale oil was stored in a 5,000 gallon underground storage tank. The storage tank was decommissioned in 1989 (DEQ File No. 26-89-121) and subsurface soil contamination was removed. DEQ issued a No Further Action letter for this work on October 19, 1989.
1950s to 1994	Gasoline Storage	Gasoline contains BTEX constituents. Gasoline was stored in three underground storage tanks (4,000, 6,000, 10,000 gallons). These tanks were decommissioned in 1994 (DEQ.File No. 26-94-019) and subsurface soil contamination was removed. DEQ issued a No Further Action letter for this work on September 27, 1994.
1950's to present	Diesel Storage	Petroleum hydrocarbons and a small fraction of PAHs are likely present in the fuels. Diesel is stored in 500 gallon above ground storage tank in a concrete contained area.
1960s to 2001	Mobile Vehicle Cleaning	From 1960's to 1999, mobile vehicles used at the plant (lift trucks) were steam cleaned in an outside area adjacent to outfall 5. In 1999, the steam cleaning sump was disconnected from the storm water system and piped to the sanitary sewer. Soils and vegetation around outfall 5 show signs of visible staining from oil and grease.
1952 to 2001	Glue/Resin Application	The plywood is made by gluing dried out veneer together inside the building. Glue mixing is conducted inside the covered areas of the plywood mill. A phenol-formaldehyde glue (aka resin) is used to adhere sheets of veneer together to make plywood.

Date Range for Potential Source	Potential Source Identification	Potential Source Description
		Glue contains phenol-formaldehyde resin, wheat flour and caustic soda. The phenolic resin (phenol and formaldehyde) is stored in storage tanks located on the east side of the plant in a bermed concrete containment area. Caustic soda is stored on the east side of the plant in a bermed concrete containment area. These materials are conveyed in pipelines to a mix tank located inside of the building. The mix tank is cleaned with water annually with the tank bottoms placed in a tank to dewater. The tank bottoms are then disposed of in a dumpster as a solid waste. The wash down water is collected and conveyed to a storage vault near the resin storage tanks. The wash water is then reused as wash water with make up water added. Resin residues were recycled into operations and reused as resin feedstock at the plant.
1950s to 2001	Maintenance Shop Activities	Cleaning of tools and parts using kerosene and alcohol, storage area for tools, parts and motors. Wet cleanup methods were used up to the 1990's, when dry cleanup methods were incorporated as best management practices. Metal grinding for tool sharpening also conducted. Areas were periodically washed down with wash water discharging to outside areas and collected in the storm water collection system through outfall 5. All used oil was reused onsite to oil the dryer chains. DEQ also identified that a methylene chloride containing adhesive was also stored in this area. PCB containing transformers are located in this area. Maintenance area washdown could have conveyed some constituents to the outside areas. Storm water could then convey runoff to the river.
1952 to 2001	Transformers	Privately owned transformers were maintained by GE, including an annual inspection. The frequency of transformer fluid replacement was determined by GE's staff electrician. LPA had five transformers with a total of 1751 gallons of oil. The amount of transformer fluid changed over the life of each transformer is unknown. Other transformers on site were owned and maintained by PGE.
1951 - 2001	Boiler seepage well	A seepage well was used to manage periodic boiler blowdown water. A seepage well that was four feet in diameter and four feet deep was

Date Range for Potential Source	Potential Source Identification	Potential Source Description
		located just outside of the boiler building on LPA's property. A sump pump was placed in this seepage well to remove water during boiler cleaning, with the water being pumped into the City of Portland sewer system. An unknown volume of water was used to flush the boilers.

Over-water Activities

Over-water structures at LPA consist of a wood dock, which is attached to the building and extends over the river. The dock extending off of the LPA structure is a remnant of the older Clark and Wilson Sawmill operation and was not used by LPA. Green end operations include raw log barking (equipment located over water) and raw log peeling (conducted in the mill). Oils and solvents were used in the process to maintain the equipment.

A conveyor belt extending from the building to the river was used from 1951 to 1992 to transport logs into the building for peeling into plywood veneer. The log conveyor from the river to the plant ceased operation in 1992 and was retracted from the river.

A pier structure north of the LPA dock provides access to a fire suppression system housed over the water and separate from the plant. There is also a fire suppression pump intake located to the north of the plant building site. A PGE Transformer was located on this pier from [installation] to 1979.

Raw logs historically were stored in the Willamette River along waterfront pilings until processing began at the dock, where over-/in-water activities included cutting off the ends of the logs, cutting logs to length, and loading them onto a conveyor to transport the logs from the river to the green end. Over-water work in this area produced wastes such as sawdust, bark, and organic debris from log handling. Potential contaminants included machinery and transformer oils, metals, fuels, and rubber. Green end and over-/ in-water operations ended in 1992 when LPA began to import veneer sheets via rail and truck.

Wood debris from the green end in-water area was periodically dredged to remove accumulated process material. This material was placed upland along the bank between 1972 and 1986 under permit from the U.S. Army Corps of Engineers (USACE). The area subsequently was filled with significant volumes of sand and gravel as the Columbia River Sand and Gravel and Glacier NW operations expanded and leveled the soil in the area.

Although the dredging permits allowed the removal of approximately 2500 to 3000 cubic yards of material from the river annually, this is the maximum that could be removed. The actual amount of woody debris dredged from the 'log pond' is unknown but is believed to be significantly less.

Air Pollution Controls

An air pollution control device was operated at the plant between 1974 and 2001. This device was a wet scrubber, which controlled air emissions from the veneer dryers (No.1 and No.2). This devise controls emissions of particulates, NO2, CO, and VOCs.

There is one (1) fuel cell boiler which is fired with sander dust and plywood trim. The Georgia Pacific (G.P.) scrubber controls the emissions from the fuel cell and the two veneer dryers. The fuel cell and the scrubber were installed in 1981. The heat for the two veneer dryers and the ABCO steam boiler is supplied by the fuel cell. The air permit for the facility also indicated that particulates, NO2, CO, and VOCs were to be controlled from the fuel cells.

There are a total of eleven (11) cyclones. Eight (8) cyclones exhaust directly to the atmosphere. Three (3) cyclones vent to a baghouse. The cyclones handle plywood trim and sander dust.

There are two (2) Carter Day baghouses. Baghouse No. 1 which is in series with the three (J) cyclones was installed in 1972. Baghouse No. 1 controls the sander dust emissions. Baghouse No.2 was installed in 1973. Baghouse No. 2 controls emissions from the woodwaste that is transported across the mill through a pneumatic conveying system.

Storm Water

The Properties contain seven storm water outfalls, which collect surface water runoff from the property and water entering the property from up gradient.

Two storm water drains (Outfalls 1 and 6) receive flow from US Highway 30 and assumed to include hillside runoff from Forest Park and the up gradient surface streets of the Linnton neighborhood. There are seven storm water outfalls located on the shoreline of the property; one (Outfall 1) along the southern (leased) portion of the property and six along the shoreline of the northern mill area. Two, Outfalls 1 and 6, appear to originate at Highway 30; Outfall 1 has no inlets on the LPA property and Outfall 6 has a single inlet on the paved area north of the LPA plant. Outfalls 2, 3, 3a, 4 and 5 drain storm water from the paved mill area. Outfalls 2 to 5 (those serving the LPA plant area) are assumed to have been constructed in the time period of 1952 to 1974. Outfalls 1 and 6, which drain from Highway 30, have been in place since LPA has operated the plant. Outfalls 1 and 6 are believed to also drain.

LPA prepared a spill prevention, control, and countermeasure (SPCC) plan in 1992 and maintained the plan under permit until operations ceased. After the plant closed in 2001, various measures were taken to prevent environmental impacts during salvage and mothballing operations. These include placing catch basin filters in storm drain grates, draining hydraulic oil and lubricants from equipment before salvage removal, and removing unused glue feedstock, fuel, lubricants, hydraulic oil, and other petroleum products from the Property. Concrete press pits, former used to house plywood presses, were cleaned and inspected for cracks or evidence of releases. Catch basin filter socks were installed in 2002 at the Property and have been maintained quarterly since that time.

Storm water in the plant area drains across paved areas to the north and south of the plant building. To the north of the building, storm water drains to a single catch basin that discharges to the public culvert servicing Outfall 6. A small section near the river drains to Outfall 5, and a smaller section by the Maintenance Building drains off the edge of the pavement to a vegetated

and rip rapped section of bank immediately north of the plant. Storm water to the south of the plant nearest the entrance drains to the railroad right-of-way, where it is presumed to infiltrate. The western portion of the southern area and the building roof drains discharge via Outfalls 2, 3, 3A, and 4.

Outfall 1: drains Highway 30, with no known inlets on LPA property.

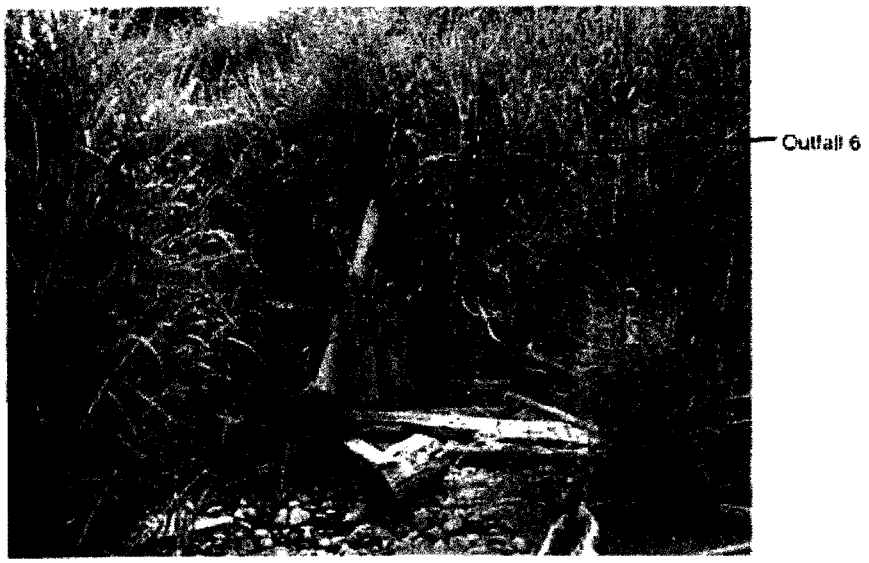
Drainage Area 1/Outfall 2: small paved area on southeast corner of the industrial property

Drainage Area 2/Outfall3, 3A, and 4: northwest of Drainage Area 1, area around storage tanks, roof drainage from pressing and finishing building,

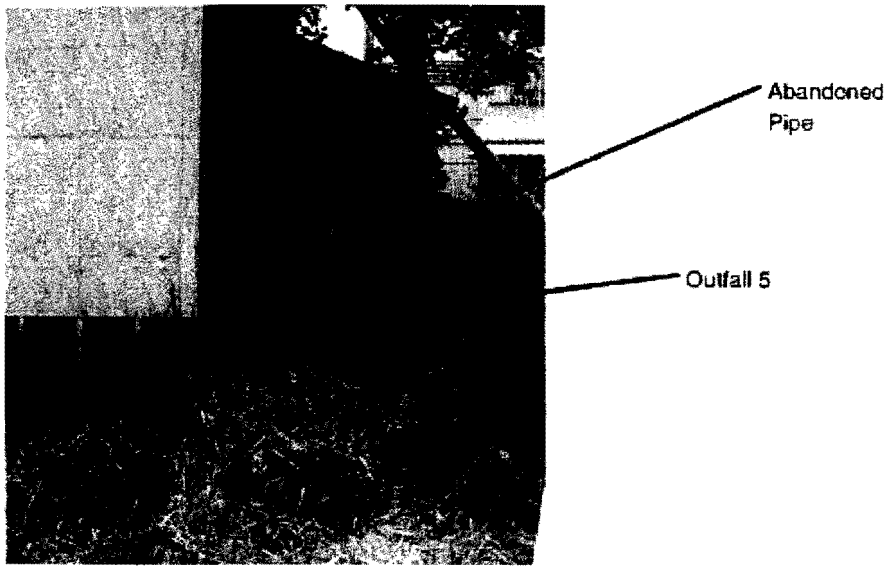
Drainage Area 3/Outfall 5: small paved area on north side of property, area contains auto repair shop, diesel tank, maintenance repair shop, pipe shop, and steam-cleaning area. (The steam cleaning area water currently discharges to the City of Portland's sanitary sewer.)

Drainage Area 4/Outfall 6: runoff from northwestern and southwestern areas of site. Area contains air pollution control scrubber, veneer storage, and contained barrel filling area.

Outfall 6: The drainage basin for this outfall is the paved area on the western side of the plywood mill. Drainage basin includes pale oil application area, veneer storage area, scrubber overflow (sander dust burner), sander dust burner, contained barrel filling area, and transformers T1, T5A, T5B, and T5C; may also include railroad lines, sawdust bin, and wood waste fuel bin area. Sampling results may suggest migration of hazardous substances from the pale oil application and overflow from the scrubber used to treat the air discharge from the sander dust burner. The PAH levels detected in sediments at the discharge location of Outfall 6 may suggest a historic potential onsite source. However, as explained above, the pipeline above Outfall 6 receives storm water from upgradient and offsite sources. Accordingly, the recent closing of the facility and the cessation of pale oil application and scrubber usage eliminates these on-site sources as a potential present source and migration pathway. The outfall discharges approximately 10 feet below the paved area grade at an elevation around 16 feet MSL, close to the facility boundary. The discharge then falls an additional 10 feet to the mud flat at the bottom of the slope. Sampling shows that the following chemicals exceed screening levels for this outfall: TPH-oil, lead, zinc, and PAHs (anthracene, benzo-a-anthracene, fluoranthene, phenanthrene, and pyrene). Phenol and pentachlorophenol detection limits were too high (40-60 times SLVs) to determine whether these parameters were of concern.

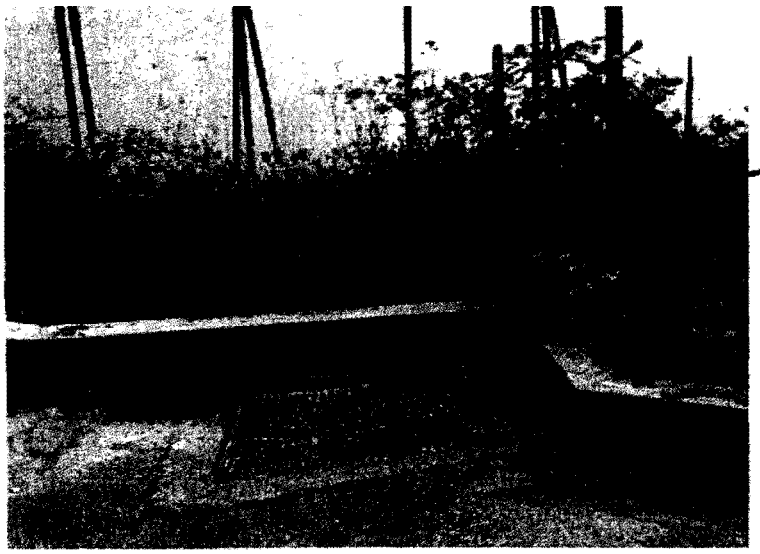


Outfall 5: The drainage basin for this outfall is the paved area on the northwest side of the plywood mill. Drainage basin includes auto repair shop, maintenance shop, pipe shop, diesel tank, steam cleaning area and transformer T2. The floor drain in the maintenance shop and the outdoor steam cleaning pad lead to Outfall 5. The floor drains were installed in the 1950s when the plant was converted to a plywood mill. Outfall 5 is a small-diameter pipe which discharges onto soil near the top of the bank. The outfall discharges approximately 6 feet below the paved area grade onto a vegetated slope above the 17 feet MSL facility boundary. Sampling shows that the following chemicals exceed screening levels for this outfall: cadmium, copper, lead, zinc, and bis(2-exylhexyl)phalate. Phenol and pentachlorophenol detection limits were too high (40-60 times SLVs) to determine whether these parameters were of concern.



Outfall 4: Outfall 4 is located 30 feet downstream of outfall 3. This outfall drains storm water from the roofs of the plywood mill. The outfall discharges approximately 10 feet below the paved area grade onto a riprap slope above the 17 feet MSL facility boundary. This outfall was not sampled.

Outfalls 3 and 3A: The drainage basin for this outfall is the paved area on the southeast side of the plywood mill, west of the drainage basin for outfall 2. The outfall discharges approximately 2 feet below the paved area grade onto a riprap slope above the 17 feet MSL facility boundary. Drainage basin includes hog fuel bin, boiler house, diesel AST, caustic AST, resin AST, propane AST, oil AST, gasoline UST, and transformers T4A, T4B, and T4C. Sampling shows that none of the chemicals analyzed exceed screening levels for this outfall. Benzo(a)pyrene, phenol and pentachlorophenol detection limits were too high (40-60 times SLVs) to determine whether these parameters were of concern.



Catch basin discharge on other side of curb.

Bank below Outfall 3.

Outfall 2: The drainage basin for this outfall is the paved area on the southeast side of the plywood mill. The outfall discharges approximately 2 feet below the paved area grade onto a riprap slope above the 17 feet MSL facility boundary. Land area where sander dust ash has been placed may also drain to this outfall. Sampling shows that the following chemicals exceed screening levels for this outfall: Phenol and pentachlorophenol detection limits were too high (40-60 times SLVs) to determine whether these parameters were of concern. Sampling shows that none of the chemicals analyzed exceed screening levels for this outfall. Benzo(a)pyrene, phenol and pentachlorophenol detection limits were too high (40-60 times SLVs) to determine whether these parameters were of concern.

Chemicals

Adhesives
Aircraft deicing fluid
Anhydrous isopropanol
Brake fluid
Calcium hypochlorite
Caustic Potash
Caustic Soda/sodium hydroxide (NaOH) (50%)
Coil cleaner
Diesel Fuel
Disinfectant cleaner
Epoxy resins
Formaldehyde-based resin feedstock
    formaldehyde
    soda ash
    caustic (NaOH)
Gasoline
Glycols
Herbicide (Roundup)
Hydrochloric Acid (HCl)
Inks
Kerosene
Lacquer Thinner
LP Gas
Methylene chloride
Muriatic acid
Oils (hydraulic, form, etc)
Paints
Pale oil
Phenol resin
Polystyrene
Propane
Purex
Sealers
Set concrete crack filler
Set vinyl concrete
Soda ash
Solvent cleaner
Stripper
Synthetic elastomer (Edge Glue)
Transformer oil
Transmission fluid
Water-based paint
Welding supplies

Chemicals of Concern

The following constituents of concern are identified for the LPA site:

- LPAHs associated with petroleum product use and sander dust ash from the historical and current use review and 1997 EPA sediment data.
- HPAHs associated with petroleum product use and sander dust ash from: the historical and current use review and 1997 EPA sediment data.
- Dibenzofuran associated with sander dust ash from the historical and current use review and 1997 EPA sediment data.
- Phenol associated with phenolic resin and wood waste from the historical and current use review
- Cadmium, chromium, lead and zinc associated with metal grinding in the maintenance shops from the historical and current use review
- Cadmium, chromium, lead and zinc associated with paint pigments from the historical and current use review
- VOCs associated with paints from the historical and current use review

Based on the conceptual site model, the following are considered potentially complete pathways for the discharge of hazardous substances to the Willamette River:

- PAHs and dibenzofuran via bank erosion in the area of outfall 2
- PAHs and dibenzofuran via stormwater discharge through outfall 2
- PAHs and metals via stormwater discharge through outfall 5
- VOCs, selected metals, PAHs and dibenzofuran via stormwater discharge through outfall 6

TABLE 2
Comparison of Chemicals of Concern Upland and In-River

Class	Chemical	Upland Groundwater	Upland Soil	In River Surface	In River Subsurface
Butyltins	Tributyltin ion	--	NA	X	X
Dioxin/Furan	1,2,3,7,8-Pentachlorodibenzofuran	NA	NA	X	X
	2,3,4,7,8-Pentachlorodibenzofuran	NA	NA	X	X
	2,3,7,8-Tetrachlorodibenzofuran	NA	NA	X	X
	2,3,7,8-Tetrachlorodibenzo-p-dioxin	NA	NA	X	X
	Total TCDD toxicity equivalent	NA	NA	X	X
Metal	Cadmium		X		
	Chromium		X		
	Copper	X	X		
	Lead	X	X	X	X
	Mercury	NA	NA	X	X
	Selenium	NA	NA	X	X
	Zinc	NA	X		
PAH	2-Methylnaphthalene	?	?		X
	Acenaphthene	?	?	X	X
	Acenaphthylene	?	?		X
	Anthracene	?	X		X
	Benzo(a)anthracene	?	X		X
	Benzo(a)pyrene	?	X	X	X
	Benzo(g,h,i)perylene	?	?	X	X
	Chrysene	?			X
	Dibenzo(a,h)anthracene	?	?	X	X
	Fluoranthene	?	X		X
	Fluorene	?			X
	Indeno(1,2,3-cd)pyrene	?	X	X	X
	Naphthalene	?			X
	Phenanthrene	?	X	X	X
	Pyrene	?	X	X	X
	Total PAHs	calc	calc	X	X
PCB	Total Aroclor	calc	calc	X	X
	PCB077	NA	NA	X	X
	PCB081	NA	NA	X	X
	PCB105	NA	NA	X	X
	PCB106 & 118	NA	NA	X	X
	PCB114	NA	NA	X	X
	PCB126	NA	NA	X	X
	PCB156	NA	NA	X	X
	PCB157	NA	NA	X	X
	PCB167	NA	NA	X	X
	PCB169	NA	NA	X	X
	Total PCB Congeners	NA	NA	X	X
Phenol	Phenol		?		X

Class	Chemical	Upland Groundwater	Upland Soil	In River Surface	In River Subsurface
SVOC	Hexachlorobutadiene	?	?		X
	Hexachlorocyclopentadiene	?	?		X
Petroleum	TPH-G				
	TPH-D		X	X	X
	TPH-O	NA	X	X	X
Phthalate	Bis(2-ethylhexyl) phthalate	X	X		
	Dibutyl phthalate		?		X
Pesticides	Dieldrin	--	--		X
	Sum DDE	--	--	X	X
	Sum DDT	--	--	X	X
	Total Chlordanes	--	--	X	X
	Total of 2,4' and 4,4'-DDD	--	--	X	X
	Total of 2,4' and 4,4'-DDE	--	--	X	X
	Total of 2,4' and 4,4'-DDT	--	--	X	X

Notes:

? Detection limit too high (>10x SLV) to evaluate
NA Not analyzed
X Measured in at least one sample greater than SLV
blank Less than SLV
-- Chemical not expected in pathway

Environmental Releases

Scrubber ash was generated by the air pollution control device. The ash from the scrubber was placed onsite from approximately 1981 until approximately 1997, after which the ash was transported offsite to a permitted Subtitle D landfill until 2001. The scrubber ash placement area was used for management of scrubber ash. The dimensions of the scrubber ash placement area have been estimated by Jimmy Stahly of LPA to be approximately 50 by 50 feet. However, the ash may have spread and could have covered a larger area. Scrubber ash placed on the site is estimated to total approximately 220 cubic yards. The exhaust from the veneer dryers was analyzed for contaminants in 1995. The scrubber ash was tested for toxicity characteristic leaching procedure (TCLP) metals in December 1999 and November 2000.

Soil from the scrubber ash placement area was sampled and analyzed in October 2002 and March 2007. The scrubber ash was found to contain 31 mg/kg lead, 52 mg/kg chromium, 13 mg/kg arsenic, 709 mg/kg barium, and trace levels of polynuclear aromatic hydrocarbon (PAH) compounds. After 1997 and before plant closure in 2001 scrubber ash was placed in plastic-lined roll-off for transport to Hillsboro Land Fill. Scrubber ash placed on the Property was found to be in a hardened state similar to cement, and appears to have had pozzolanic properties. It was a medium gray color and consisted of fine-grained material. It contained low levels of trace metals and low levels of three PAHs (fluoranthene, phenanthrene, and pyrene, all below 34 micrograms per kilogram).

Woody debris from the 'log pond' (a near-shore embayment of the Willamette River) was dredged from the river and placed on shore periodically between 1952 through 1992 to facilitate use of the log conveyor. This operation was conducted in accordance with permits from the US Army Corp of Engineers and Oregon Division of State Lands. Dredge spoils were placed on area later leased to Columbia Sand and Gravel. Sand and gravel operations have filled site with approximately 10 ft of fill in this area of the site.

Knife grinding activities between 1951 and 1992 resulted in the accumulation of debris because the sharpening wheel was lubricated with water outside the grinding shop. The knife grinding debris area received debris from knife grinding activities. The knife grinding debris area was estimated to be about 13 by 15 feet. Knife grinding debris was generated between 1951 and 1992. Debris and underlying soil was excavated and disposed of offsite in 2003. This removal was overseen by DEQ. A total of approximately 54 cubic yards (over 45 tons of affected soil were removed from the two areas) of knife-grinding debris and underlying soil was removed in 2003 and disposed of at the Hillsboro Landfill. Testing showed the debris contained low levels of lead and copper and higher levels of chromium. TCLP testing results were well below the hazardous waste limit for chromium. The debris and underlying soil were removed in 2003 and confirmation samples of underlying soil obtained. A previous removal at an earlier date may have occurred but is unconfirmed.

An estimated 20 to 25 gallons of pale oil (also known as 'form oil', a light, diesel-like material) were released in February of 1995 from an aboveground storage tank (DEQ Spill No. 95-381). Some of the oil entered the onsite storm drain, discharged through Outfall 6 and created a sheen on the Willamette River. The incident was reported to DEQ.

A PGE-owned General Electric (GE) transformer located on the pier was found to be low on mineral oil during PGE's annual maintenance in 1979. No release of transformer oil was observed or documented; rather, it was observed that the transformer appeared to be approximately one quart low on transformer oil, and the potential release was inferred from this observation. There was no oil staining beneath the transformer, nor any other visible evidence of a release. No oil has been observed to be missing in subsequent inspections of the transformer. DEQ was notified of the potential release and DEQ determined that no investigation or testing was necessary. In 1979 the transformer was moved by PGE from the pier and installed on land to allow emergency shut off and easier access.

Approximately 20-55 gallons of pale oil (a light, diesel-like product used for coating plywood concrete forms) used in paint booth area were released in February of 1995 from an aboveground storage tank (DEQ Spill No. 95-381). Some of the oil entered the onsite storm drain, discharged through Outfall 6, and created a sheen on the Willamette River.

A 5,000-gallon form oil underground storage tank (UST) was removed and decommissioned in 1989. About 200 cubic yards (yd3) of contaminated soil were removed from the excavation and disposed of at an offsite facility (DEQ, 1999). Three fuel USTs were removed from the northern property in 1994, and 80 cubic yards of soil were excavated, with the soil being aerated onsite. DEQ issued LPA a no further action closure determination on September 27, 1994.

DEQ issued a notice of noncompliance for failure to submit annual or monthly monitoring reports on time in 1992 and 1993. DEQ also issued a notice of noncompliance for exceeding opacity and volatile organic compound (VOC) limits for air emissions from a fuel cell boiler and veneer dryers (1995).

DEQ issued a notice of noncompliance for failure to submit an annual hazardous waste generator report in 2003. LPA had obtained a RCRA waste generator number in 2002 to facilitate removal of unused caustic, and as a closed business was not aware of the need to submit annual reports. DEQ noted the closed status of LPA and no further action was taken.

Sander Dust Ash Disposal. Captured solids from the air treatment system for sander dust burner were spread on the ground to dry landfilled on this parcel. Columbia Sand and Gravel has placed over 10 feet of fill on the site since their operations started, so the ash in now capped with sand. After 1997, the sander dust ash has been mixed with the sand processed by Columbia Sand and Gravel in the same area as the original disposal site.